TECHNICAL SCHEDULE III

PROPOSED PLANT DETAILS

(To be completed by the Tenderer)

1.2 Mechanical Works Rajacanal Phase-I STP

3.1.1 Mechanical Coarse Screen – Bar Screen

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Quantity (W+S)	Nos.	
	(iv) Type		
	(v) Auto jam removal system		Yes/No
(b)	**Screen**		
	(i) Clear Spacing	mm	
	(ii) Width	mm	
	(iii) Height	mm	
	(iv) Raking speed	m/min	
	(v) Motor rating	kW	
	(vi) Water Level	m	
(c)	**Materials of Construction** (i) Frame		
	(ii) Rake carriage		
	(iii) Screen bars		
	(iv) Fasteners		
	(v) Canopy		
(d)	**Belt Conveyor System**		
	(i) Material of belt		
	(ii) Width of conveyor	mm	
	(iii) Speed of conveyor	m/sec	
	(iv) Thickness of belt and ply rating		
	(v) Make of the belt		
	(vi) Motor rating	kW	

S. No.	Description	Units	Particulars
	(vii) Safety device		
(e)	**Screw Conveyor System**		
	(i) Make		
	(ii) Material		
	(iii) Speed	rpm	
	(iv) Motor rating	kW	
	(v) Size of screw	mm	
	(vi) Angle of screw	deg	
(f)	**Unit Control Panel** (i) Make		
	(ii) Over all dimensions	m x m x m	
	(iii) Degree of protection		
	(iv) Timer • Make • Type		

3.1.2 Manual BAR Screen

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Quantity (W+S)	Nos.	
	(iv) Type		
	(v) Auto jam removal system		Yes/No
(b)	**Screen**		
	(i) Clear Spacing	mm	
	(ii) Width	mm	
	(iii) Height	mm	
	(iv) Raking speed	m/min	
	(v) Motor rating	kW	
	(vi) Water Level	m	

S. No.	Description	Units	Particulars
(c)	**Materials of Construction** (i) Frame		
	(ii) Rake carriage		
	(iii) Screen bars		
	(iv) Fasteners		
	(v) Canopy		

3.1.3 Dewatering pumps

S. No.	Description	Units	Particulars for dewatering pump of backwash pumping station	Particulars for dewatering pump of grit channel
(a)	(i) Make			
	(ii) Type			
	(iii) Service/Location			
	(iv) Quantity (W+S)	Nos.		
	(v) Capacity	cum/ hr		
	(vi) Head	mlc		
	(vii) Efficiency	%		
	(viii) Power absorbed	kW		
	(ix) Speed	rpm		
	(x) Motor rating	kW		

3.1.4 Fine screen Mechanical Fine Screen – Bar Screen

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Quantity (W+S)	Nos.	
	(iv) Type		

S. No.	Description	Units	Particulars
	(v) Auto jam removal system		Yes/No
(b)	**Screen**		
	(i) Clear Spacing	mm	
	(ii) Width	mm	
	(iii) Height	mm	
	(iv) Raking speed	m/min	
	(v) Motor rating	kW	
	(vi) Water Level	m	
(c)	**Materials of Construction** (i) Frame		
	(ii) Rake carriage		
	(iii) Screen bars		
	(iv) Fasteners		
	(v) Canopy		
(d)	**Belt Conveyor System**		
	(i) Material of belt		
	(ii) Width of conveyor	mm	
	(iii) Speed of conveyor	m/sec	
	(iv) Thickness of belt and ply rating		
	(v) Make of the belt		
	(vi) Motor rating	kW	
	(vii) Safety device		
(e)	**Screw Conveyor System**		
	(i) Make		
	(ii) Material		
	(iii) Speed	rpm	
	(iv) Motor rating	kW	
	(v) Size of screw	mm	
	(vi) Angle of screw	deg	
(f)	**Unit Control Panel** (i) Make		
	(ii) Over all dimensions	m x m x m	

S. No.	Description	Units	Particulars
	(iii) Degree of protection		
	(iv) Timer • Make • Type		

3.1.5 Manual Fine bar screen

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Quantity (W+S)	Nos.	
	(iv) Type		
	(v) Auto jam removal system		Yes/No
(b)	**Screen**		
	(i) Clear Spacing	mm	
	(ii) Width	mm	
	(iii) Height	mm	
	(iv) Raking speed	m/min	
	(v) Motor rating	kW	
	(vi) Water Level	m	
(c)	**Materials of Construction** (i) Frame		
	(ii) Rake carriage		
	(iii) Screen bars		
	(iv) Fasteners		
	(v) Canopy		

3.1.6 Vortex Type Grit Removing Equipment

S. No.	Description	Units	Particulars
1	Manufacturer		
2	Country of origin		
3	Type & Model		Vortex grit mechanism

S. No.	Description	Units	Particulars
4	No. of units	Nos	
5	Design flow for each Unit		
	Minimum		
	Maximum		
	Design		
6	Grit design Load	m3/ month	
7	Settled grit specific gravity		2.65
8	Guaranteed removal rate for > 0.105 mm (105 micron) in size	%	>95%
9	Turndown Ratio of grit chamber (for 95% of 0.105 mm grit removal)		
	Grit chamber		
1	Degree of Grit Chamber		360
2	Dia of Upper Chamber	mm	
3	Upper Chamber Depth	mm	
4	Dia of Lower Chamber	mm	
5	Lower Chamber Depth	mm	
6	Inlet & effluent channel width	mm	
7	Total Depth	mm	
8	Grit Hopper Storage Volume	m^3	
9	MOC of main internals under water		
10	**Head loss across the grit mechanism**		
	Minimum		
	Maximum		
	Design		
11	**Upstream Velocity**		
	Minimum		
	Maximum		
	Design		
A	**Vortex Drive Motor**		
1	Manufacturer		
2	Country of origin		
3	No. of units		
4	Type		
5	Power	kW	
6	Rotary speed of output shaft	rpm	

S. No.	Description	Units	Particulars
7	Rotary speed of motor shaft	rpm	
8	Efficiency at duty point	%	
9	Total efficiency pump and motor	%	
10	Degree of protection	IP	
11	Weight per unit	kg	
12	Protections needed		
13	Weight per unit	kg	
B	**Grit Pump**		
1	Manufacturer		
2	Country of origin		
3	No. of units	Nos	
4	Store Standby		
5	Type : Flooded Suction / Top Mounted		
6	Capacity of the pump	m^3/h	
7	Delivery head (after all losses - bends & horizontal piping)	m WC	
8	Efficiency	%	
9	Power demand at shaft	kW	
10	Solids handling	mm	
11	Weight per unit	kg	
Material			
1	Pump housing		
2	Motor housing		
3	Propeller hub		
4	Impeller		
5	Shaft		
6	Shaft seal pump side		
7	Shaft seal motor side		
8	Impeller type		
Motor			
1	Manufacturer		
2	Country of origin		
3	No. of units	Nos	
4	Type		
5	Nominal power	kW	
6	Efficiency at duty point	%	
7	Total efficiency pump and motor	%	

S. No.	Description	Units	Particulars
8	Degree of protection	IP	
9	Weight per unit	kg	
10	Protections needed		
C	**Grit Classifier**		
1	Manufacturer		
2	Country of origin		
3	No. of units	No.	
4	Type		
5	Throughput capacity	m^3/h	
6	Dryness of the grit	%	
7	Sand output rate	m^3/h	
8	Organic content in the final dewatered grit (from the outlet of grit classifier)	%	
9	Weight of the Unit	Kgs	
Dimensions			
1	Total height	mm	
2	Total length	mm	
3	Height of sand discharge	mm	
4	Height of tank	mm	
5	Width of tank	mm	
6	Inclination of spiral	Deg	
Materials			
1	Tank		
2	Covers		
3	Spiral		
4	Wear rails		
Motor			
1	Manufacturer		
2	Country of origin		
3	No. of units	Nos	
4	Type		
5	Nominal power	kW	
6	Efficiency at nom. point		
7	Motor input speed	rpm	
8	Motor output speed	rpm	
9	Degree of protection	IP	
10	Starting method		
11	Ex. classification		

S. No.	Description	Units	Particulars
12	Weight per unit	kg	
13	Protections needed		
List of Documents to be provided by vendor			
1	Completely filled data Sheets		
2	Process Design Basis and treatment Philosophy - Vortex grit chamber and Grit classifier		
3	**Documentary Evidence for :** Successful Installations of Min. 5 Nos of vortex grit removal Units for the peak flow offered as per this tender, shall be furnished by the manufacturer along with full scale field test results / reports for each Installation performed by qualified personnel having at least 3 years' experience in performing the test, proving the ability to achieve the tender specified efficiency.		
4	Deviations List (if any deviations considered)		

3.1.7 Air Blower for Vortex Type Grit Removing Equipment

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)	Nos.	
	(iv) Capacity at NTP	m^3/min	
	(v) Design maximum discharge pressure	mlc	
	(vi) Efficiency	%	
	(vii) Speed, blower	rpm	
	(viii) Absorbed power	kW	
	(ix) Motor rating	kW	
	(x) Speed, motor	rpm	

S. No.	Description	Units	Particulars
	(xi) Noise level at Duty Point in dB(A) at 1.86 m from the unit	dB(A)	
	(xii) Vibration	mm/sec	
	(xiii) With Acoustic Hood	dB(A)	
	(xiv) Without Acoustic Hood	dB(A)	
	(xv) Weight – Blower	kgs	
	(xvi) Maximum lifting weight	kgs	
	(xvii) Dimensions (L x W x H)	m x m x m	
	(xviii) Coupling Type		
	(xix) Coupling Make		
	(xx) Cooling System		
(b)	**Material of construction:**		
	(i) Casing		
	(ii) Impeller		
	(iii) Shaft		
	(iv) Common Base frame		
	(v) Orientation		
(c)	**Acoustic Hood:**		
	(i) Type		
	(ii) Material of Construction		
(d)	**Inlet/Outlet silencer**		
	(i) Type		
	(ii) Make		
	(iii) Filter media		
	(iv) Mean air velocity	m/s	
(e)	**Noise reduction (mean) Air release valves**		
	(i) Number	Nos.	
	(ii) Diameter	mm	
	(iii) Type		
	(iv) Set pressure	bar	
	(v) Make		
(f)	**Delivery non-return valves**		
	(i) Number	Nos.	
	(ii) Diameter	mm	
	(iii) Type		
	(iv) Make		
(g)	**Delivery isolation valves**		
	(i) Number	Nos.	
	(ii) Diameter	mm	
	(iii) Type		

S. No.	Description	Units	Particulars
	(iv) Make		

3.1.8 Aspirating Aerators

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Type		
	(iii)Oxygen Transfer Efficiency		
	(iv)Type of operation		
	(v)Maximum water depth the Aerator can operate(m)		
	(vi) Weight (total)		
(b)	**Flexible Hose**		
	(i)Materials of Construction		
	(ii)Length		
	(iii) Quantity		
c)	**Air Delivery Shaft**		
	(i)Materials of Construction		
	(ii)Length		
(d)	**Propeller**		
	(i)Materials of Construction		
	(ii) Type		
	(iii) Number of Blades		
	(iv) Efficiency		
(e)	**Guide vanes**		
	(i)Materials of Construction		
	(ii)Type		

3.1.9 Blowers for Aspirating Aerators

S.No	Description	Units	Particulars
(a)	**General**		
	(i)Make		
	(ii)Type		
	(iii) Quantity (W+S)	Nos	
	(iv)Capacity at NTP	M3/ min	
	(v) Design maximum discharge pressure	Mle	
	(vi) Efficiency	%	
	(vii)Speed, Blower	Rpm	
	(viii)Absorbed Power	Kw	
	(ix)Motor rating	Kw	
	(x)Speed, Motor	Rpm	
	(xi)Noise level at Duty Point in dB(A) at 1.86m from the unit	dB(A)	
	(xii) Vibration	Mm/ sec	
	(xiii)Weight Blower	Kgs	
	(xiv)Maximum Lifting weight	kgs	
	(xv)Dimensions (LxWxH)	m	
	(xviii)Coupling type		
	(xix)Coupling Make		
(b)	**Material of construction**		
	(i)Casing		
	(ii)Impeller		
	(iii)Shaft		
	(iv)Common Base frame		

	(v)Orientation		
(c)	**Inlet silencer/filter**		
	(i)Type		
	(ii)Make		
	(iii)Filter media		
	(iv) Mean air velocity	m/s	
(d)	**Delivery non-return valves**		
	(i)Number	Nos	
	(ii)Diameter	Mm	
	(iii)Type		
	(iv)Make		
e)	**Instrumentation for blowers**		

3.1.10 Motors for Blowers-Aspirating aerators

S. No.	Description	Units	Particulars
(a)	**General**		
	(i)Make		
	(ii)Type		
	(iii)Rating	KW	
	(iv)Temperature rise		
	(v)Insulation class		
(b)	**Particulars at the rated voltage and frequency**		
	(i)Starting time	Sec	
	(ii)Starting current	%FL	
	(iii)Pull out torque	%FLT	
	(iv)Pull up torque	%FLT	
(c)	**Minimum voltage required under starting conditions to accelerate driven equipment to rated speed.**	Volts	
(d)	**Starting time at specified minimum starting voltage**	Sec	
(e)	**Permissible Running time at full load at minimum allowable voltage**	Min	
(f)	**Locked rotor current withstand time at 110% rated voltage**		

	(i)At rated temp (hot)	Sec	
	(ii)When cold	Sec	
(g)	**Efficiency**		
	(i)Full load		
	(ii)3/4 load		
	(iii)1/2 load		
	(iv)At duty point		
(h)	**Power factor**		
	(i)Full load		
	(ii)3/4 Load		
	(iii)1/2 Load		
(i)	**Motor Bearings**		
	(i)Permissible temperature rise for bearings	oC	
	(ii)Design ambient temperature assumed for above	oC	
(j)	**Motor bearing lubrication system self- lubrication /forced oil lubrication.**		

3.1.11 Secondary clarifiers unit

S. No.	Description	Units	Particulars
(a)	i) Make		
	ii) Quantity		
	iii) Type		
	iv) Tank size	Dia x SWD	
	v) Rake Arm speed	rpm	
	vi) Feed Well Size	Dia m x Ht m x Thk mm	
	vii) Width of walkway	m	
	viii) V-notch weir size & thickness	mm	
	ix) Country of Origin		
	Materials		
	x) Tank		
	xi) Bridge		

S. No.	Description	Units	Particulars
	xii) Feed Well		
	xiii) Walkway		
	xiv) Handrail		
	xv) Rake Arm		
	xvi) Centre shaft		
	xvii) Blades		
	xviii) V-notch weir		
	xix) Squeegees		
	xx)Anchor Bolts(Under water/Above water)		
	Scum removal system		
(b)	**Motor Drive**		
	i) Drive type		
	ii)Power	KW	
	iii)Voltage	V	
	iv)Frequency	Hz	
	v)Nominal current	A	
	vi)Rotational Speed	rpm	
	vii)Make		
	viii)Protection grade		
	ix)Gear		
	Others		
	x)Painting		
	xi)Accessories supplied		

3.1.12 Diffusers for CCT

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Diffuser OD x Length	mm x mm	
	(v) Chamber Dimensions (L x W x SWD)	mm x mm	
	(vii) Quantity	No.	
	(ix) Weight per Diffuser	Kg	
	(x) Design air flow per diffuser	m^3/hr	

S. No.	Description	Units	Particulars
	(xi) Efficiency per diffuser	%	

3.1.13 Mixed Liquor Recycle Pump set (Internal Recycle Pumps)

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)	No.s	
	(v) Tubular Installation		Yes/No
(b)	**Performance**		
	(i) Capacity	cu.m/hr	
	(ii) Total head	mlc	
	(iii) Speed	rpm	
	(iv) Overall efficiency (Pump + Motor)	%	
	(v) Motor Rating	kW	
(c)	**Materials of Construction**		
	(i) Impeller		
	(ii) Casing		
	(iii) Shaft		
	(iv) Mechanical seal		
	(v) Delivery pipe and diameter		
	(vi) Guide wire/rope & Lifting Chain		
	(vii) Dia of the tube/pipe & MOC		
(d)	Weight	Kg	
(e)	Accessories as specified (Provided / Not provided)		
(f)	Testing & Inspection:		
	(i) Pump performance testing standard		

S. No.	Description	Units	Particulars
	(ii) Maximum Noise level	dB(A)	
	(iii) Maximum velocity of vibration	mm/sec	

3.1.14 RAS Pump set (Submersible pump)

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)	Nos	
(b)	**Performance**		
	(i) Capacity	cum/hr	
	(ii) Total head	mlc	
	(iii) Speed	rpm	
	(iv) Overall efficiency (Pump + Motor)	%	
	(v) Motor Rating	kW	
(c)	**Materials of Construction**		
	(i) Impeller		
	(ii) Casing		
	(iii) Shaft		
	(iv) Delivery pipe and diameter		
	(v) Mechanical Seal		
	(vi) Cooling Jacket		
(d)	Weight	Kg	
(e)	Accessories and piping as specified (Provided / Not provided)		
(f)	**Testing & Inspection:**		
	(i) Pump performance testing standard		
	(ii) Maximum Noise level	dB(A)	
	(iii) Maximum velocity of vibration	mm/sec	

S. No.	Description	Units	Particulars
(g)	**Motor :**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Quantity (W+S)		
	(v) Rating	kW	
	(vi) Weight	kgs	

3.1.15 WAS Pump set (Submersible pump)

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)	No.s	
(b)	**Performance**		
	(i) Capacity	cu.m/hr	
	(ii) Total head	mlc	
	(iii) Speed	rpm	
	(iv) Overall efficiency (Pump + Motor)	%	
	(v) Motor Rating	kW	
(c)	**Materials of Construction**		
	(i) Impeller		
	(ii) Casing		
	(iii) Shaft		
	(iv) Delivery pipe and diameter		
	(v) Mechanical Seal		
	(vi) Cooling Jacket		
(d)	Weight	Kg	

S. No.	Description	Units	Particulars
(e)	Accessories and piping as specified (Provided / Not provided)		
(f)	**Testing & Inspection:**		
	(i) Pump performance testing standard		
	(ii) Maximum Noise level	dB(A)	
	(iii) Maximum velocity of vibration	mm/sec	
(g)	**Motor :**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Quantity (W+S)		
	(v) Rating	kW	
	(vi) Weight	kgs	

3.1.16 Alum Dosing Pumps

S. No.	Description	Units	Particulars
(a)	**Pumps**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)		
	(iv) Model		
	(v) Capacity max/min	l/s	
	(vi) Head	mlc	
	(vii) Stroke adjustment	mm	
	(viii) Stroking speed max/min	spm	
	(ix) Casing material		
	(x) Diaphragm material		
	(xi) Shaft material		
	(xiii) Motor rating	kW	
	(xiv) Motor Make		
(b)	**Alum preparation Tank:**		
	(i) Make		
	(ii) Model		

S. No.	Description	Units	Particulars
	(iii) Quantity (W+S)	nos	
	(iv) Size (Diameter x Height)	m x m	
	(v) Material of construction		
(c)	**Alum solution mixer**:		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)	nos	
	(v) Motor rating	kW	
	(vi) Motor speed	rpm	
	(vii) Mixer speed	rpm	
	(viii) Impeller material		
	(ix) Shaft material		

3.1.17 Sludge Thickener

S. No.	Description	Units	Particulars
(a)	i) Make		
	ii) Quantity		
	iii) Type		
	iv) Tank size	Dia x SWD	
	v) Rake Arm speed	rpm	
	vi) Feed Well Size	Dia m x Ht m x Thk mm	
	vii) Width of walkway	m	
	viii) V-notch weir size & thickness	mm	
	ix) Country of Origin		
	Materials		
	x) Tank		
	xi) Bridge		
	xii) Feed Well		
	xiii) Walkway		
	xiv) Handrail		
	xv) Rake Arm		
	xvi) Centre shaft		
	xvii) Blades		
	xviii) V-notch weir		
	xix) Squeegees		
	xx)Anchor Bolts(Under water/Above water)		

S. No.	Description	Units	Particulars
(b)	**Motor Drive**		
	i) Drive type		
	ii)Power	KW	
	iii)Voltage	V	
	iv)Frequency	Hz	
	v)Nominal current	A	
	vi)Rotational Speed	rpm	
	vii)Make		
	viii)Protection grade		
	ix)Gear		
	Others		
	x)Painting		
	xi)Accessories supplied		

3.1.18 Decanter Centrifuge

S. No.	Description	Units	Particulars
	Make		
(a)	i) Bowl		
	ii) Maximum main speed	rpm	
	iii) Centrifugal force at maximum main speed	rpm	
	iv) Operating main speed	rpm	
	v) Bowl diameter	mm	
	vi) Bowl length	mm	
	vii) Cone angle	Deg	
	viii) Outlet design		
	ix) Liquid outlet, type		
	x) Solids discharge type		
	xi) Solids discharge - wear protection		
	Material		
	xii) Frame and casing Cover		
	xiii) Frame		
	xiv)Bowl		
	Gear Box		
	xv) Gearbox, type		
	xvi) Gearbox, torque rating	kNm	
	xvii) Gearbox, ratio		
	Dimensions		
	xviii) Total width	mm	
	xix) Total height	mm	

S. No.	Description	Units	Particulars
	xx) Total length	mm	
	xxi) Dry Weight	kg	
	xxii) Concrete structure length, width and height	mm	
	xxiii) Make		
(b)	**Motor Drive**		
	i) Drive type		
	ii)Power	KW	
	iii)Voltage	V	
	iv)Frequency	Hz	
	v)Nominal current	A	
	vi)Rotational Speed	rpm	
	vii)Make		
	viii)Protection grade		
(c)	**Control**		
	i)Type		
	ii)Interlocks provided		

3.1.19 Chlorination System

S. No.	Description	Units	Particulars
(a)	**Automatic Changeover Device**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)		
	(iv) Model		
(b)	**Chlorinator**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)		
	(iv) Model		
	(v) Max capacity	kg/hr	
	(vi) Min Capacity	kg/hr	
	(vii) Accuracy as a percent of actual rate in the operating range	±%	
	(viii) Details of Instruments mounted		
	(ix) Cabinet Material		
(c)	**Chlorine load Cell (weighing scale)**		
	(i) Make		

S. No.	Description	Units	Particulars
	(ii) Type		
	(iii) Range		
	(iv) Quantity (W+S)		
(d)	**Chlorine leak detector**		
	(i) Make		
	(ii) Type		
	(iii) Range		
	(iv) Quantity (W+S)		
	(v) Location		
	(vi) Adjustable range of Alarm		
	(vii) State whether separate alarms for leak detection and leak detector equipment failure are provided		
(e)	**Chlorine Tonners and Roller supports**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S) - Chlorine tonners - Roller supports	Nos	
	(iv) Tonner capacity	Kgs	
	(v) Material of construction:		
	Body		
	Rollers		
	Bush		
(f)	**Liquid Chlorine Pipe work, valves and fittings:**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)	nos	
	(iv) Rating		
(g)	**Material of construction:**		
	(i) Pipe		
	(ii) Fittings		
	(iii) Valves		
	(iv) Type		
	(v) Body		
	(vi) Shaft		
	(vii) Plug/Disc/Diaphragm		
(h)	**Valve Actuator:**		
	(i) Make		
	(ii) Type		

S. No.	Description	Units	Particulars
	(iii) Model		
(i)	**Pressure Gauges:**		
	(i) Make		
	(ii) Type		
	(iii) Range		
(j)	**Gas Chlorine Pipe work, valves and fittings:**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)		
	(iv) Rating		
(k)	**Material of construction:**		
	(i) Pipe		
	(ii) Fittings		
	(iii) Valves		
	(iv) Type		
	(v) Quantity		
	(vi) Body		
	(vii) Shaft		
	(viii) Plug/Disc/Diaphragm		
(l)	**Valve Actuator:**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)	nos	
	(iv) Model		
(m)	**Pressure Gauges:**		
	(i) Make		
	(ii) Type		
	(iii) Range		
(n)	**Chlorine Ejectors:**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)	nos	
	(iv) Model	Nos.	
	(v) Rating		
	(vi) Material of construction :		
	(vii) End connections		
(o)	**Tonner lifting Beam with Hooks**		
	(i) Make		
	(ii) Quantity (W+S)		
	(iii) Material of construction		

S. No.	Description	Units	Particulars
(p)	**Chlorine Tonner weighing equipment**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)		
	(iv) Range		
	(v) Accuracy		
(q)	**Safety Equipment:**		
	(i) Make:		
	(ii) Quantity:		
	(iii) Type:		
	(iv) Self contained breathing apparatus quantity		
	(v) Positive air-line breathing apparatus quantity		
	(vi) Instant action resuscitators quantity		
	(vii) Safety clothing complete set quantity		
	(viii) Emergency showers quantity		
	(ix) Eye Baths quantity		
	(x) Portable compressor, recharging cylinder, quick release coupling complete set quantity		
(r)	**Chlorine Gas scrubber :**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Quantity (W+S)		
	(v) MOC of Tower		
	(vi) Weight	kg	
	(vii) Capacity	Kgs	
	(viii) Caustic pump capacity/head	Cum/ hr/m	
	(ix) Type & Make		
	(x) Motor Rating	kW	
	(xi) MOC of Caustic Pump		
	- Casing		
	- Impeller		
	- Shaft		
	(xii) Blower capacity/pressure	Cum/ hr/ bar	
	(xiii) Type & Make		

S. No.	Description	Units	Particulars
	(xiv) MOC of Blower		
	- Casing		
	- Impeller		
	- Shaft		
	(xv) Agitator in the tank		Yes/No
	(xvi) Type & Make		
	(xvii) MOC of agitator		
	(xviii) Motor Rating	kW	

3.1.20 Chlorine Booster Pump

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)	Nos.	
(b)	**Performance**		
	(i) Capacity	cum/hr	
	(ii) Total head	mlc	
	(iii) Speed	rpm	
	(iv) Overall efficiency (Pump + Motor)	%	
	(v) Motor Rating	kW	
(c)	**Materials of Construction**		
	(i) Casing		
	(ii) Impeller		
	(iii) Shaft		
	(iv) Shaft Sleeve		
	(v) Mechanical Seal		
	(vi) Base Plate		
	(vii) Delivery pipe and diameter		

S. No.	Description	Units	Particulars
(d)	Weight	Kgs	
(e)	**Testing & Inspection:**		
	(i) Pump performance testing standard		
	(ii) Maximum Noise level	dB(A)	
	(iii) Maximum velocity of vibration	mm/sec	

3.1.21 Chlorine Building Ventilation

S. No.	Description	Units	Particulars
(a)	**Chlorine cylinder room**		
	Exhaust fans:		
	(i) Make		
	(ii) Model		
	(iii) Quantity(W+S)		
	(iv) Capacity	m^3/s	
	(v) Speed	rpm	
	(vi) Motor rating	kW	
(b)	**Ducting :**		
	(i) Standard		
	(ii) Type		
	(iii) Dimension	m x m	
	(iv) Material		
(c)	**Chlorinator Room:**		
	(i) Exhaust fans		
	(ii) Make		
	(iii) Model		
	(iv) Quantity (W+S)		
	(v) Capacity	m^3/s	
	(vi) Speed	rpm	
	(vii) Motor rating	kW	
(d)	**Ducting :**		
	(i) Standard		
	(ii) Type		
	(iii) Dimension	m x m	
	(iv) Material		

3.1.22 Electric Hoist for Chlorination building

S. No.	Description	Units	Particulars
(a)	**Electric hoist**		**Chlorination building**
	(i) Make		
	(ii) Type and class		
	(iii) Safe working Load	tonne	
	(iv) Hoist speed high/low	m/min	
	(v) Long Travel speed	m/min	
	(vi) Cross travel speed	m/min	
	(vii) Span	m	
(b)	**Hoisting Rope:**		
	(i) Diameter	mm	
	(ii) Construction		
	(iii) Quality of steel		
	(iv) Minimum Breaking Load	kgs	
	(v) Factor of safety		
(c)	**Motors for Hoist/Long travel/cross travel :**		
	(i) Make		
	(ii) Type		
	(iii) Rating	kW	
(d)	**Details of Brakes for Hoist/cross travel/Long travel:**		
	(i) Make		
	(ii) Design Holding Torque	N-mm	
	(iii) Net weight	kgs	

3.2.23 Electric Hoist

S. No.	Description	Units	Particulars			
(a)	**Electric Hoist**		**Centrifuge building**	**Chlorination building**	**RAS &WAS Pumps**	**Internal Recycle Pumps**
	(i) Make					
	(ii) Type and class					
	(iii) Safe working Load	tonne				

S. No.	Description	Units	Particulars			
	(iv) Hoist speed high/low	m/min				
	(v) Cross travel speed	m/min				
	(vi) Span	m				
(b)	**Hoisting Rope:**					
	(i) Diameter	mm				
	(ii) Construction					
	(iii) Quality of steel					
	(iv) Minimum Breaking Load	kgs				
	(v) Factor of safety					
(c)	**Motors for Hoist/ cross travel :**					
	(i) Make					
	(ii) Type					
	(iii) Rating	kW				
(d)	**Details of Brakes for Hoist/cross travel:**					
	(i) Make					
	(ii) Design Holding Torque	N-mm				
	(iii) Net weight	kgs				

3.1.24 Manual hoist

Sr. No.	Description	Particulars			
		Polymer dosing system	**Dirty WASH pumps**	**Backwash pumps**	**Alum dosing system**
(a)	Capacity (tonnes)				
(b)	Quantity				
(c)	Class				
(d)	Lift (m)				
(e)	Span (m)				
(f)	Length of the runway (m)				
(g)	Hook type / Constructio				

Sr. No.	Description	Particulars			
		Polymer dosing system	**Dirty WASH pumps**	**Backwash pumps**	**Alum dosing system**
	n				
	- I.S. Specification No.				
	- Swivel type				
(h)	Wire rope construction and standard				
(i)	Specification/ Type of Rails for Long Travel				
(j)	**Painting**				
	- Type of primer coat				
	- No. of coats of paint				

3.1.25 Sludge Pumps (progressive cavity pumps)

S. No.	Description		Units	Particulars	
				Thickened sludge to centrifuge(Centrifuge Feed Pump)	**Sludge cake pump at Sludge Dewatering units**
(a)	(i)	Make			
	(ii)	Type			
	(iii)	Model			
	(iv)	Quantity			

S. No.	Description		Units	Particulars	
				Thickened sludge to centrifuge(Centrifuge Feed Pump)	**Sludge cake pump at Sludge Dewatering units**
		(W+S)			
	(v)	Capacity	cum/hr		
	(vi)	Head	mlc		
	(vii)	Efficiency	%		
	(viii)	Max. solid size	mm		
	(ix)	Speed	rpm		
	(x)	Motor rating	kW		
(b)	**Material of construction :**				
	(i)	Casing			
	(ii)	Rotor			
	(iii)	Stator			
	(iv)	Line shaft			
	(v)	Sealing			
	(vi)	Base Plate			
(c)	**Construction Features**				
	(i)	Protection			
	(ii)	Flange drilling standard			
	(iii)	Suction diameter	mm		
	(iv)	Discharge diameter	mm		
	(v)	Coupling type/make			
(d)	**Motor**				
	(i)	Make			
	(ii)	Motor rating	kW		
	(iii)	Motor speed	rpm		
	(v)	Insulation class			
	(vi)	Enclosure			
	(vii)	Voltage & Frequency			

3.1.26 Screw Conveyor for sludge handling

Screw Conveyor System		Particulars

3.1.27 Polyelectrolyte Dosing Pumps & package

S. No.	Description	Units	Particulars
(a)	**Pumps**		
	(i) Make		
	(ii) Type		
	(iii) Quantity (W+S)	nos	
	(iv) Model		
	(v) Capacity max/min	l/s	
	(vi) Head	mlc	
	(vii) Stroke adjustment	mm	
	(viii) Stroking speed max/min	spm	
	(ix) Casing material		
	(x) Diaphragm material		
	(xi) Shaft material		
	(xiii) Motor rating	kW	
	(xiv) Motor Make		
(b)	**Polyelectrolyte preparation Tank:**		
	(i) Make		
	(ii) Model		
	(iii) Quantity (W+S)		
	(iv) Size (Diameter x Height)	m x m	
	(v) Material of construction		
	Dry polymer feeder capacity		
	Polymer storage bin		
(c)	**<u>Poly solution Agitator</u>**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)		
	(v) Motor rating	kW	
	(vi) Motor speed	rpm	
	(vii) Mixer speed	rpm	
	(viii) Impeller material		
	(ix) Shaft material		
	(x) Solids recovery		

3.1.28 Booster service water pumps

S. No.	Description	Units	Particulars
(a)	**General**		
	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Quantity (W+S)	Nos.	
(b)	**Performance**		
	(i) Capacity	cum/hr	
	(ii) Total head	mlc	
	(iii) Speed	rpm	
	(iv) Overall efficiency (Pump + Motor)	%	
	(v) Motor Rating	kW	
(c)	**Materials of Construction**		
	(i) Casing		
	(ii) Impeller		
	(iii) Shaft		
	(iv) Shaft Sleeve		
	(v) Mechanical Seal		
	(vi) Base Plate		
	(vii) Delivery pipe and diameter		
(d)	Weight	Kgs	
(e)	**Testing & Inspection:**		
	(i) Pump performance testing standard		
	(ii) Maximum Noise level	dB(A)	
	(iii) Maximum velocity of vibration	mm/sec	

3.1.29 Air-conditioning Equipment (For SCADA Room)

S. No.	Description	Units	Particulars
(a)	(i) Make		
	(ii) Model		
	(iii) Type		
	(iv) Capacity	TR	
	(v) Quantity	Nos.	
	(vi) Motor Rating	kW	
	(vii) Air-Ducting :		
	(viii) Material		
	(ix) Size		
	(x) Quantity		
	(xi) Whether all the required accessories are provided	Yes/No	

3.1.30 Disc Filter

S. No.	Description	Units	Particulars
(a)	i) Total Peak flow		
	ii) Disc model / quantity		
	iii) Maximum solid inlet concentration	mg/l	
	iv) Maximum solid outlet concentration	mg/l	
	v) Mesh size		
	vi) Disc Area (Each Disc)	m^2	
	vii) Model number		
	viii) Flow per disc	m^3/hr	
	ix) Quantity	nos	
	x) Number of Discs	nos	
	xi) Disc Diameter	mm	
	xii) Screening Outlet level	mm	
	xiii) Maximum water level at inlet	mm	
	xiv) Total width	mm	
	xv) Total height	mm	
	xvi) Total length	mm	
	xvii) Dry Weight	kg	
	xviii) Concrete structure length, width and height	mm	
	xix) Make		
(b)	**Screen Drive**		

S. No.	Description	Units	Particulars
	i) Drive type		
	ii)Power	KW	
	iii)Voltage	V	
	iv)Frequency	Hz	
	v)Nominal current	A	
	vi)Rotational Speed	rpm	
	vii)Make		
	viii)Protection rade		
	ix)Gear		
	x)No of pumps per machine	nos	
	xi) Max Delivery	m3/hr	
	x)Pressure	mwc	
	xi)Accessories supplied		

3.1.31 Electric Hoist

S. No.	Description	Units	Particulars	
(a)	**Electric Hoist**		**Disc Filter**	**Intermediate Sump**
	(i) Make			
	(ii) Type and class			
	(iii) Safe working Load	tonne		
	(iv) Hoist speed high/low	m/ min		
	(v) Cross travel speed	m/ min		
	(vi) Span	m		
(b)	**Hoisting Rope:**			
	(i) Diameter	mm		
	(ii) Construction			
	(iii) Quality of steel			
	(iv) Minimum Breaking Load	kgs		
	(v) Factor of safety			
(c)	**Motors for Hoist/ cross travel :**			
	(i) Make			
	(ii) Type			
	(iii) Rating	kW		
(d)	**Details of Brakes for Hoist/cross travel:**			
	(i) Make			
	(ii) Design Holding Torque	N-mm		

S. No.	Description	Units	Particulars	
	(iii) Net weight	kgs		

1.2.1 Submersible Pump Set

S. No.	Description		Units	Particulars
				Intermediate sump
(a)	(i)	Tank capacity	cum	
	(ii)	Tank Dimensions	mm	
(b)	**Pump**			
	(i)	Pump Make		
	(ii)	Type		
	(iii)	Model		
	(iv)	Quantity (W+S)	Nos.	
	(v)	Capacity	m^3/s	
	(vi)	Head	mlc	
	(vii)	Shut off Head	metres	
	(viii)	NPSH required	metres	
	(ix)	Submergence required	metres	
	(x)	Efficiency	%	
	(xi)	Absorbed power at duty point	kW	
	(xii)	Motor rating	kW	
	(xiii)	Speed	rpm	
(c)	**Material of construction:**			
	(i)	Casing		
	(ii)	Impeller		
	(iii)	Shaft		
	(iv)	Mechanical Seal		
	(v)	Lifting Chain and Guide Bar		
	(vi)	Cooling Jacket		
	(vii)	Discharge size	mm	
	(viii)	Suction size	mm	
	(ix)	Flange Drilling standard:		
	(x)	Weight (Pump + Motor)	kgs	
(d)	**Testing & Inspection:**			

S. No.	Description		Units	Particulars
				Intermediate sump
	(i)	Pump performance testing standard		
	(ii)	Maximum Noise level	dB(A)	
	(iii)	Maximum velocity of vibration	mm/ sec	
(e)	**Motor :**			
	(i)	Make		
	(ii)	Type		
	(iii)	Model		
	(iv)	Quantity (W+S)		
	(v)	Rating	kW	
	(vi)	Weight	kgs	

1.2.2 Valves

S. No.	Description	Units	Particulars
(a)	**<u>Butterfly valves :#</u>**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Service		
	(v) Quantity (W+S)	Nos.	
	(vi) Size	mm	
	(vii) Rating	PN	
	(viii) Test pressure	bar	
	Material of construction		
	(ix) Body		
	(x) Disc		
	(xi) Sealing face		
	(xii) Shaft		
	Gear Reducers		
	(i) Make		
	(ii) Material		
	(iii) Flange Drilling standard		
(b)	**Butterfly Valve Actuators #**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Service		

S. No.	Description	Units	Particulars
	(v) Quantity (W+S)	Nos.	
	(vi) Motor rating	kW	
	(vii) Design Torque	N-m	
	(viii) Time for full open to full close	seconds	
(c)	**Plug valve**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Service		
	(v) Quantity (W+S)	Nos.	
	(vi) Size	mm	
	(vii) Rating	PN	
	(viii) Test pressure	bar	
	(ix) Body material		
(d)	**Non-return valves #**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Service		
	(v) Quantity (W+S)	Nos.	
	(vi) Size	mm	
	(vii) Rating	PN	
	(viii) Test Pressure	bar	
	(ix) Design standard		
	(x) Flange drilling standard		
(e)	**Material of construction:**		
	(i) Body		
	(ii) Disc/plates		
	(iii) Spring		
	(iv) Shaft		
(f)	**Sluice valves :#**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Service		
	(v) Number	Nos	
	(vi) Size	mm	
	(vii) Rating	PN	
	(viii) Test pressure	bar	

S. No.	Description	Units	Particulars
	Material of construction		
	(ix) Body		
	(x) Gate		
	(xi) Sealing face		
	(xii) Shaft		
	Gear Reducers		
	(i) Make		
	(ii) Material		
	(iii) Flange Drilling standard		
(g)	**Sluice Valve Actuators #**		
	(i) Make		
	(ii) Type		
	(iii) Number		
	(iv) Motor rating	kW	
	(v) Design Torque	N-m	
	(vi) Time for full open to full close	seconds	
(h)	**Knife Gate valves :#**		
	(i) Make		
	(ii) Type		
	(iii) Model		
	(iv) Service		
	(v) Number		
	(vi) Size	mm	
	(vii) Rating	PN	
	(viii) Test pressure	bar	
	(ix) Body material		
	(x) gate material		
	(xi) Sealing face material		
	(xii) Shaft material		
	(xiv) Gear Reducers :		
	(xv) Make		
	(xvi) Material		
	(xvii) Flange Drilling standard		
(i)	**Knife Gate Valve Actuators #**		
	(i) Make		
	(ii) Type		
	(iii) Number		
	(iv) Motor rating	kW	

S. No.	Description	Units	Particulars
	(v) Design Torque	kg-m	
	(vi) Time for full open to full close	seconds	
(j)	**Telescopic valve**		
	(i) Make		
	(ii) Quantity (W+S)	Nos.	
	(iii) Type		
	(iv) Pressure rating	PN	
	(v) Diameter /size	m	
	(vi) End connection		
	(vii) Material of construction:		
	(viii) Valve Body		
	(ix) Spindle		
	(x) Disc/gate		
	(xi) Lining		
	(xii) Fasteners		
	Ball Valves		
	(i) Make		
k)	(ii) Quantity (W+S)	Nos	
	(iii) Type		
	(iv) Pressure rating	Bar	
	(v) Diameter /size	Mm	
	(vi) End connection		
	Material of Construction		
	i) Stem		
	ii) Ball		
	iii) Seat		
	iv) Body		
	v) Fasteners		

Bidder to provide above details for each size, type of Valve and Service

1.2.3 Penstocks

Sr. No	Item		Unit	Description	
				Disc Filter Inlet	**Disc Filter outlet**

Sr. No	Item		Unit	Description	
(a)	(i)	Manufacturer			
	(ii)	Model			
	(iii)	Quantity			
	(iv)	Service			
	(v)	Type			
	(vi)	Spindle Type			
	(vii)	Size (Height x width)	mm		
	(viii)	Weight	Kgs		
	(ix)	Seating Head	Metre		
	(x)	Unseating Head	Metre		
(b)		**<u>Material of construction</u>:**			
	(i)	Wall Thimble			
	(ii)	Gate			
	(iii)	Frame			
	(iv)	Spindle			
	(v)	Stem coupling			
	(vi)	Seating face			
	(vii)	Wedge			
	(viii)	Headstock			
	(ix)	Gear House cover & stem guide			
	(x)	Lift Nut			
	(xi)	Fasteners & Anchors			
	(xii)	Lifting mechanism, Gear House & stem guide			
(c)	**Penstock Actuators +**				
	(i)	Manufacturer			
	(ii)	Type			
	(iii)	Model			
	(iv)	Service			
	(v)	Number			
	(vi)	Motor Rating	kW		

Sr. No	Item		Unit	Description	
	(vii)	Motor speed	rpm		
	(viii)	Protection			
	(ix)	Gear Reducer Make			
	(x)	Type			
		(+ Bidder to provide above details for each size of Penstock ,Actuator and Service)			

1.2.4 Butterfly Valves

Sr. No.	Item		Unit	Description
(a)	**General**			
	(i)	Manufacturer		
	(ii)	Type		
	(iii)	Model		
	(iv)	Service		
	(v)	Quantity		
	(vi)	Size	mm	
	(vii)	Rating	bar	
	(viii)	Test pressure	bar	
	(ix)	Body material		
	(x)	Disc material		
	(xi)	Sealing face material		
	(xii)	Shaft material		
	(xiii)	Gear Reducers :		
	(xiv)	Manufacturer		
	(xv)	Material		
	(xvi)	Flange Drilling standard		
(b)	**Valve Actuators**			
	(i)	Manufacturer		
	(ii)	Type		

Sr. No.	Item		Unit	Description
	(iii)	Model		
	(iv)	Service		
	(v)	Quantity		
	(vi)	Motor rating	kW	
	(vii)	Design Torque	Kg-m	
	(viii)	Time for full open to full close	minutes	

1.2.5 Sluice valves

Sr. No.	Item		Unit	Description	
(a)	(i)	Manufacturer			
	(ii)	Type			
	(iii)	Model			
	(iv)	Service			
	(v)	Number	Nos.		
	(vi)	Size	mm		
	(vii)	Rating	bar		
	(viii)	Test pressure	bar		
	(ix)	Body material			
	(x)	gate material			
	(xi)	Sealing face material			
	(xii)	Shaft material			
	(xiii)	Gear Reducers			
	(xiv)	Manufacturer			
	(xv)	Material			
	(xvi)	Flange Drilling standard			
(b)		**Sluice Valve Actuators**			
	(i)	Manufacturer			

Sr. No.	Item		Unit	Description	
	(ii)	Type			
	(iii)	Number	Nos.		
	(iv)	Motor rating	kW		
	(v)	Design Torque	Kg-m		
	(vi)	Time for full open to full close	minutes		

1.2.6 Gates

S. No.	Description		Units	Description	
(a)	(i)	Make			
	(ii)	Model			
	(iii)	Quantity (W+S)			
	(iv)	Service			
	(v)	Type			
	(vi)	Spindle Type			
	(vii)	Size	mm x mm		
	(viii)	Weight	kgs		
	(ix)	Seating Head	m		
	(x)	Unseating Head	m		
(b)	**Material of construction:**				
	(i)	Wall Thimble			
	(ii)	Gate			
	(iii)	Frame			
	(iv)	Spindle			
	(v)	Stem coupling			
	(vi)	Seating face			
	(vii)	Wedge			
	(viii)	Headstock			
	(ix)	Gear House cover & stem guide			
	(x)	Lift Nut			
	(xi)	Fasteners &			

S. No.	Description	Units	Description	
	Anchors			
	(xii) Lifting mechanism, Gear House & stem guide			
(c)	**Gate Actuators +**			
	(i) Make			
	(ii) Type			
	(iii) Model			
	(iv) Service			
	(v) Number	Nos		
	(vi) Motor Rating	kw		
	(vii) Motor speed	rpm		
	(viii) Protection			
	(ix) Gear Reducer Make			
	(x) Type			

1.2.7 Backwash pumps

Sr. No.	Item		Unit	Description
(a)	(i)	Manufacturer		
	(ii)	Type		
	(iii)	Model		
	(iv)	Quantity	No's	
	(v)	Capacity	m^3/hr	
	(vi)	Head	m	
	(vii)	Shut off Head	metres	
	(viii)	NPSH required	metres	
	(ix)	Submergence required	metres	
	(x)	Efficiency	%	
	(xi)	Absorbed power at duty point	kW	
	(xii)	Motor rating	KW	
	(xiii)	Speed	rpm	
(b)		**Material of construction:**		
	(i)	Casing		

Sr. No.	Item		Unit	Description
	(ii)	Impeller		
	(iii)	Shaft		
	(iv)	Sleeves		
	(v)	Discharge size	Mm	
	(vi)	Suction size	Mm	
	(vii)	Flange Drilling standard:		
	(viii)	Weight (Pump+Motor)	Kgs	
(c)		**Testing & Inspection:**		
	(i)	Pump performance testing standard		
	(ii)	QAP details		
	(iii)	Maximum Noise level	dBA	
	(iv)	Maximum velocity of vibration	mm/sec	
	(v)	Wash water rate/m^2 bed area		
		- Low rate	m/h	
		-High rate	m/h	
(d)		**Motor :**		
	(i)	_Make		
	(ii)	Type		
	(iii)	Model		
	(iv)	Quantity		
	(v)	Rating	kW	
	(vi)	Weight	Kgs	

The Bidder shall include additional equipment as required.

Note: All Equipment shall be make as per Bid requirements and any alternate make shall qualify the alternate make criteria clause in the bid document.

3.2 Process and CIVIL Units

S. No.	Units	STP
3.2.1	**Sewage Treatment Plant**	
(a)	**Fine Screen Influent Channel**	
	(i) Size of channel, L*B*D (m)	
	(ii) Size of incoming pumping main (m)	
	(iii) No. and size of gated openings weir gates	
	(iv) Max, Average, and Min water levels (m)	
(b)	Fine Screen Channels	
	(i) No. of units	
	(ii) Capacity of each unit (MLD)	
	(iii) Size of channel, L*B*D (m)	
	(iv) Max, Average, and Min water levels (m)	
	(v) Head loss (m)	
(c)	Fine Screen Effluent/ Grit Basin Distribution Channel	
	(i) Size of channel L*B*D (m)	
	(ii) No. and size of gated openings and type of gates – Screen Effluent	
	(iii) No. and size of gated openings and weir gates – Grit Basin Influent	
	(iv) Max, Average, and Min water levels m)	
(d)	Grit Basins	
	(i) Particle size to be removed (mm)	
	(ii) Specific gravity	
	(iii) Efficiency of removal (%)	
	(iv) Size of grit basin influent structure (m)	
	(v) Grit Basins - Number - Capacity, each MLD - Size, each, L*B*D (m)	
	(vi) Surface overflow rate (m^3/m^2/day)	
	(vii) Max, Average, and Min water levels in grit chamber m)	
(e)	Grit Basin Effluent Channel	
	(i) Size of channel (m)	
	(ii) No. and size of gated openings and type of gates	

S. No.	Units	STP
	(iii) Max, Average, and Min water levels (m)	
	(iv) Size of Bypass channel/pipe (m), Material of Construction	
(f)	Aeration Basins	
	(i) - No. of basins - Length-to-width ratio for each basin	
	(ii) Process info - Total volume (m^3) - Total HRT (Hrs) - Total SRT (days) - Anaerobic SRT (days) - Anoxic SRT (days) - Aerobic SRT (days) - Overall Length and Width for all basins (m) - Overall F/M ratio (Kg BOD removed/ Kg MLVSS/ day) - Mixed Liquor Recycle (MLR) ratio - MLR "From" and "To" locations - Return Activated Sludge (RAS) ratio - RAS "From" and "To" locations	
	(iii) Anaerobic Zones - No. of zones per basin - Volume per basin (m^3) - Total anaerobic volume (m^3) - Anaerobic volume as fraction of total volume - Side-Water Depth (SWD) (m) - Anaerobic MLSS (mg/l) - Anaerobic MLVSS (mg/l)	

S. No.	Units	STP
	(iv) Anoxic Zones - No. of zones per basin - Volume per basin (m^3) - Total Anoxic volume (m^3) - Anoxic volume as fraction of total volume - Side-Water Depth (SWD) (m) - Anoxic MLSS (mg/l) - Anoxic MLVSS (mg/l)	
	(v) Aerobic Zones - No. of zones per basin - Volume per basin (m^3) - Total Aerobic volume (m^3) - Aerobic length-to-width ratio for each basin - Aerobic volume as fraction of total volume - Side-Water Depth (SWD) (m) - Aerobic MLSS (mg/l) - Aerobic MLVSS (mg/l)	
	(vi) Hydraulic info - Aeration basin internal baffle weir elevations (m) - Max, Average, and Min water levels in all zones (m)	
(g)	Aeration Basin Effluent Channel	
	- Size of channel, L*B*D (m) No. and size of gated openings and weir gates (m)	
(h)	Alum Storage Building (i) Inside dimensions of blower building (m) (ii) Area allocated for loading / unloading (m^2) (iii) Height of Building (m) (iv) Inside dimensions of panel room (m)	
(i)	Centrifuge Building	

S. No.	Units	STP
	(i) Building inside dimensions, L*B*H (m)	
	(ii) All building slab elevations (m)	
(j)	Disc Filter	
	- Type/Make - No. of Units - Blower Capacity - Other details to be furnished - No. of Disc - Effective area - Submerged effective area	
(k)	Disc filter Building dimension	
	Inside dimensions of Disc Filter Inlet chambers(m) Inside dimensions of Disc Filter Units Pits(m) Inside dimensions of Disc Filter Outlet chambers(m) Area allocated for loading / unloading (m^2) Height of Building (m) Full dimensions of structure (m)	
(l)	Width and length of roads inside the plant (m)	
(m)	Internal drainage, water supply, and waste water disposal	
	(i) No. and Size of bore/tube well (mm)	
	(ii) Storm water drain provision (size, length in m)	
	(iii) Water Supply and Sewerage Provision (Yes/No) - Capacity and size of water storage tank (m^3) - Capacity and size of overhead tank (m^3) - Capacity and size of septic tank (if required) (m^3)	
	(iv) Nos. and size of Culverts, road crossing, etc.	

S. No.	Units	STP
(n)	Reclamation / Site Development – If Applicable	
	(i) Proposed area of Reclamation (m^2)	
	(ii) Top levels after Reclamation (m)	
	(iii) Average depth of filling (m)	
	(iv) Total quantity of earth required (m^3)	
	(v) Side slope of the filling	
	(vi) Slope protection measures	
	(vii) Proposed compaction equipment to be deployed (Type and No.)	
	(viii) Test apparatus to be provided in field soil laboratory	
	(ix) Proposed open channel dimension - Top width (m) - Bottom width (m) - Side slope - Longitudinal slope - Length (m)	
	(x) Bottom slope protection for open channel	
	(xi) Proposed equipment (type and number) for excavation, handling, transporting	
	(xii) Borrow pit - Name of the Location (s) - Area (m^2) - Type of soil in general	
(o)	Miscellaneous	
	The Bidder shall list here details of any other / additional items required for a complete installation.	

Note: 1) Sizes of units shall mean Length x Width x Depth/Height as applicable and shall be expressed in “metres” unless otherwise stated.

2) Bidder shall furnish details in above table and write “NIL” wherever not applicable to the respective plant depending upon the process.